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ABSTRACT

A longitudinal study examined the college and career transitions of graduates of the Lansing Area Manufacturing Partnership (LAMP) program, which is a school-to-career (STC) program sponsored by the United Auto Workers, General Motors Corporation, and Michigan's Ingham County Intermediate School District. The progress of three cohorts of LAMP students—20 graduates of the class of 1998, 54 graduates of the class of 1999, and 54 graduates of the class of 2000—was compared to that of groups of students who graduated from the same high schools. Data were collected through mail surveys administered every 6 months and a round of qualitative interviews with a selective sample of LAMP graduates in spring 2002. Compared with the comparison group members, the LAMP graduates pursued postsecondary education at higher rates and they had a higher level of persistence in higher education. LAMP graduates pursued a wide variety of fields of study, not limited to manufacturing or other technical careers. Compared with the comparison group members, more LAMP graduates were enrolled and working at the same time. Despite their higher rates of employment, the LAMP graduates' cumulative grade-point averages were comparable to those of the comparison group. The LAMP program has proven effective in helping students make successful school-to-work transitions and school-to-college transitions. (Contains 13 figures.) (MN)

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MOVING FORWARD

COLLEGE AND CAREER TRANSITIONS OF LAMP GRADUATES

FINDINGS FROM THE LAMP LONGITUDINAL STUDY

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I INTRODUCTION

Launched in 1997 by the United Auto Workers-General Motors Center for Human Resources (CHR), the Lansing Area Manufacturing Partnership (LAMP) has established itself as a model school-to-career initiative. Its integrated employer-driven curriculum, its emphasis on project-based learning, its team teaching structure, and the opportunity for staff and students to establish close, ongoing interactions with employees distinguish LAMP among other school-to-career (STC) programs. Three local partners comprise the LAMP partnership: the Ingham Intermediate School District, the United Auto Workers Locals 602 and 652, and the Lansing Car Assembly Center.

Since the Spring of 1998, and at CHR's request, the AED National Institute for Work and Learning (NIWL) has conducted an extensive study of the LAMP program. Numerous papers on various aspects of the LAMP initiative have been published (see Appendix).

The true test of how well LAMP prepares graduates for post-secondary education and careers in manufacturing and other industries can only be answered over time, by tracking their transition into further education, training, and the workplace and by assessing their performance on the job. Therefore, in the Fall of 1999, NIWL began a longitudinal study of LAMP graduates. The study employed a comparative design in order to test the relative effects of participation in LAMP.

This report provides answers to a wide range of questions concerning the long-term outcomes for LAMP graduates versus those of a matched comparison sample of high school graduates, including the following:

- Do LAMP graduates pursue post-secondary education and training at higher rates than the comparison group?
- Do LAMP graduates have greater retention rates in post-secondary education?
- What forms of education and training do both groups pursue?
- How do LAMP graduates compare with respect to grades in post-secondary education?
- What proportion of each group are employed and in which industries?
- What are their respective career goals and what career paths do they pursue?
- What are their respective employment trajectories with respect to wages, promotions, benefits, and career development activities?

Answers to these questions are important to both the LAMP sponsors and the broader education community. STC practitioners, researchers, and policy proponents are extremely interested in documenting the long-term effects of student participation in integrated, contextual, and work-based learning experiences. In addition to answering these questions and documenting the actual effects of participation over time, the longitudinal study of LAMP graduates represents a major contribution to the study of STC in general.

The findings in this report need to be tempered by the recognition that participation in the LAMP initiative represents a relatively minor portion of the student's overall education experience. Participants spend two and one-half hours a day of their senior year in LAMP. This follows 11 years of prior education and experiences that have undoubtedly shaped the students' goals,

academic aspirations, and orientation towards work long before their involvement in a STC program. Thus, on the one hand, we would not expect large differences between the groups, considering that over 95% of their educational experiences were essentially the same. Yet, some significant differences are observed.

At the same time, it is quite possible that the initial advantage the LAMP graduates have over their non-LAMP counterparts may disappear as program participation recedes further behind them. The short-term nature of the program experience, followed by employment after high school graduation in conjunction with the experience of attending college, may attenuate the long-term effects of LAMP participation. Analyses of the longitudinal data suggest to us a powerful effect due to participation followed by a trend toward convergence between the LAMP and comparison groups on several dimensions two to three years after graduation as the effects of college and employment become more salient in the young graduates' lives.

In short, the one-year LAMP experience offers participants a helpful boost when making the transition from high school to post-secondary education and the world of work. We would fully expect, therefore, even greater effects if the entire high school experience incorporated more of the instructional practices employed by LAMP.

II METHODOLOGY

The LAMP longitudinal study is designed to track post-high school educational trajectories and employment activities of LAMP graduates and a comparison sample. Selecting appropriate comparison groups, maintaining contact with research samples over time, and applying proper statistical controls are just some of the challenges associated with longitudinal studies. This section describes the methods and strategies NIWL employed to address these issues.

Research Sample

To avoid the limitations of a small sample size we chose to follow three cohorts of LAMP students: the Classes of 1998 (n=20), 1999 (n=54), and 2000 (n=54). Their progress is being compared to a group of students who have graduated from the same set of high schools.

Comparison Sample Selection

For analytical purposes, it was imperative that a scientifically defendable comparison sample be drawn. We matched LAMP students one-to-one with comparable students based on gender, race, age, GPA, and school attended. With the help of school administrators and counselors, we were able to construct comparison groups for both the Classes of 1999 and 2000. We were unable to do this for the Class of 1998 as they had already graduated when the study began.

Sample Retention

Retention of the research sample is a major issue in longitudinal research. Even in shorter studies, it is not uncommon to lose 25-50% of the original sample. Keeping track of graduates once they leave the school system is a complex task. This is of course especially problematic

when starting with a small sample at the outset. Using a combination of tracking mechanisms, participant incentives, and tenacious data collection, we have been able to retain the vast majority of both samples (90%) in the study.

Data Collection Process

To track changes in educational and employment status, mailed surveys were administered to members of both samples every six months (in June and December). Individuals failing to return the survey by the due date were contacted by telephone and prompted to complete the survey by phone at that time or return the survey within seven days. As each cohort joined the study, baseline data including demographic information and attitudinal information about their high school experience were collected.

To supplement the quantitative data collected through the surveys, we undertook a round of qualitative interviews with a selective sample of LAMP graduates in the spring of 2002. The purpose of the interviews was to explore in greater detail a set of issues and themes suggested by analysis of the survey data including the decision-making process surrounding career plans, job changes and work-based training, the determinants of job satisfaction, and work experience at General Motors Corporation.

Data presented in this report were gathered between December 1999 and June 2002.

Data Analysis

Each wave of data collection yielded an independent set of analyses illustrating graduate progress to that point in time. With each subsequent wave of data, new and comparative analyses have been conducted (e.g., cohort trajectory as a whole, comparisons over time, and comparisons between groups). This report presents a comprehensive overview of the data accumulated over the course of this three-year study. Many of the charts in this report present pooled data for the Classes of 1999 and 2000 at three points in their post-secondary careers: at 6 months, 12 months, and 18 months after graduation. This allows us to plot the relative progress of the LAMP and non-LAMP groups side-by-side over an 18-month period.

III EDUCATIONAL OUTCOMES

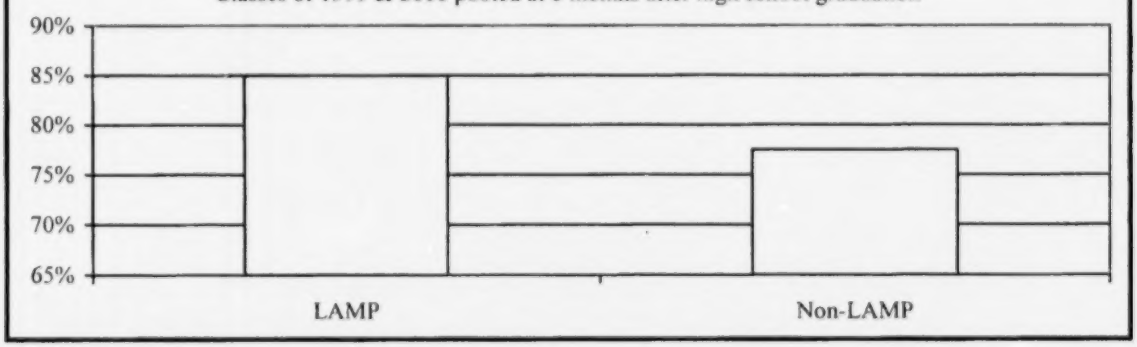
Enrollment in Post-Secondary Education

It is frequently assumed that school-to-career programs limit the opportunities for their graduates to attend college, channeling them prematurely into low-level jobs. Findings from our study of LAMP graduates refute this myth. While LAMP is generally considered a career preparation initiative, LAMP graduates pursue higher education at exceptional rates.

As Figure 1 shows, six months after high school graduation, 85% of LAMP graduates were enrolled in college as compared to 77.5% of the non-LAMP comparison group. For both groups, the proportion is well over the national average of 63% in 1999[1], due in large measure to the fact that both groups were relatively strong academically while in high school. Overall, LAMP graduates enroll in college at higher rates than the comparison group, suggesting that such a program better motivates or prepares young people to pursue higher education than a more traditional high school experience. This is particularly remarkable, given the program's short length. In interviews with a small number of LAMP graduates, they overwhelmingly identified higher education as the means by which they will attain their career goals.

Figure 1: College Enrollment

Classes of 1999 & 2000 pooled at 6 months after high school graduation



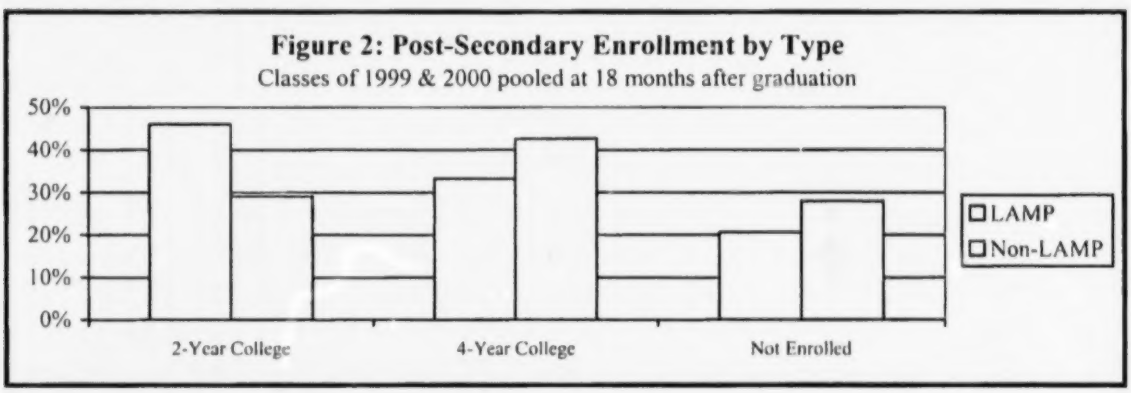
Although LAMP graduates participate in post-secondary education at high rates, we were curious to learn if their fields of study were limited to technical or manufacturing ones due to their participation in the program. The answer appears to be no. LAMP graduates pursue a wide variety of fields of study, with less than one-third enrolled in manufacturing, technical, or engineering fields in the last round of data collection (January 2002). Removing the engineers and electricians from this group, as these skills can be applied both within and outside of manufacturing, only 13 out of 94 currently-enrolled graduates (or 14%) are in manufacturing fields. Twenty-five percent of the enrolled LAMP graduates are studying business, management, or accounting, which are useful in the auto industry but can likewise be applied in other sectors. Over 40% of the LAMP graduates were in other fields of study, ranging from elementary education and psychology to physical therapy, criminal justice, and history. While one purpose

[1] U.S. Department of Education (2001), Digest of Education Statistics. National Center For Education Statistics: Washington, DC.

of the LAMP program is to introduce students to manufacturing as a possible career, it does not appear to limit graduates in the fields of study that they pursue.

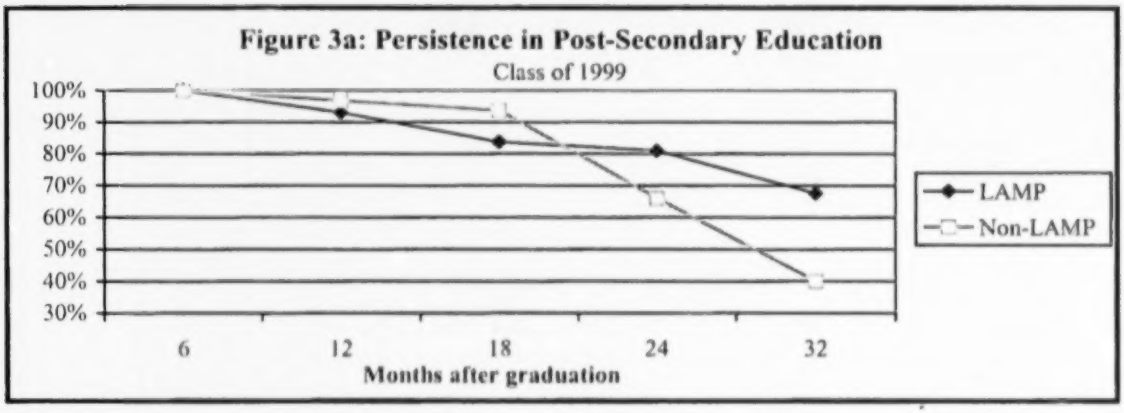
While one might assume that participation in the LAMP program aids those who do pursue manufacturing-related education, giving them knowledge about specific aspects of the industry, it also appears to broaden the horizons to those interested in other careers, such as business or finance. A LAMP graduate with a long-term interest in accounting stated that he previously had no idea that there were accounting jobs available at corporations such as General Motors. The qualitative evidence suggests that others also have come to recognize the auto manufacturing industry as a potential employer for a variety of professionals. When a small sample of LAMP 1998 to 2000 graduates were interviewed recently, most said that LAMP did a good job of educating them about career opportunities in general.

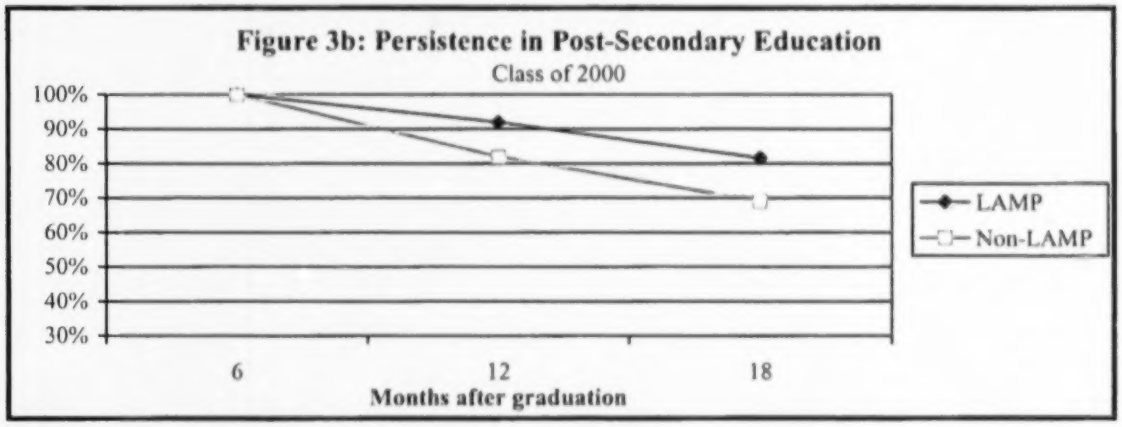
Of those enrolled in higher education, more LAMP graduates attend two-year rather than four-year colleges, as Figure 2 illustrates. Forty-six percent of LAMP graduates were enrolled in two-year colleges at 18 months after high school graduation with 33% in four-year schools. The comparison group presents an opposing picture (29% and 43% respectively). As recent Bureau of Labor statistics indicate, the fastest growing labor markets require some higher education, but not a four-year degree. This suggests that the LAMP graduates in two-year institutions are well-positioned to enter the labor market in a competitive manner. One further difference between the two groups is that more LAMP graduates are enrolled in school part-time (25% at 18 months after completion) than their comparison group (10%), which, as we shall see, allows them to gain more work experience while enrolled in higher education.



Persistence in Post-Secondary Education

If participating in LAMP served as a good college preparatory experience, we should anticipate that LAMP graduates will exhibit greater persistence in post-secondary education. To test this, we first looked at the number of students who enrolled immediately after high school and calculated the percentage of this group who continued their education without interruption. At each data collection point, those who successfully completed their programs were removed from subsequent analyses. The following figures (3a and 3b) examine the college persistence of those graduates who were enrolled six months after high school graduation.





Not only are a larger number of LAMP graduates enrolled in post-secondary education immediately following high school, a greater proportion are remaining enrolled without interruption. Of the LAMP Class of 1999 who had enrolled in college or training programs immediately upon completing high school, 68% of those were still enrolled two years later. This contrasts dramatically to the 40% of the comparable non-LAMP sample who were still enrolled. Likewise, for the Class of 2000, 86% of the LAMP graduates were still enrolled one year later, while 69% of the non-LAMP graduates were. LAMP students clearly exhibit greater persistence in college and other post-secondary training, suggesting that the STC program successfully prepared them for this transition. Given the high attrition rates of college students nationwide, especially those in two-year programs, this represents a significant finding of the longitudinal study.

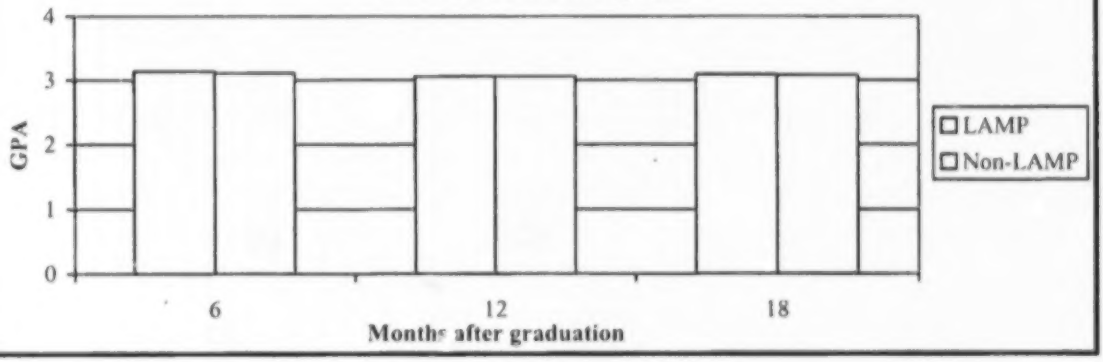
Performance in Post-Secondary Education

So far we have seen that LAMP graduates enroll at higher rates and are more persistent in their pursuit of a post-secondary degree. How, then, are they performing academically? As mentioned in the methodology section, individuals in the LAMP and non-LAMP groups were matched up by high school GPA, gender, race, age, and school attended. Statistically, we know that high school academic performance is strongly correlated with college academic

performance, and that relationship is reflected in our data as well. Both groups have sustained a "B" average as shown in Figure 4. While LAMP graduates have marginally higher GPAs in college than the non-LAMP graduates at 6 and 18 months after graduation, these data indicate that there is not a discernible difference in academic performance between the two groups.

Figure 4: Grade Point Average in Post-Secondary Education

Classes of 1999 & 2000 pooled

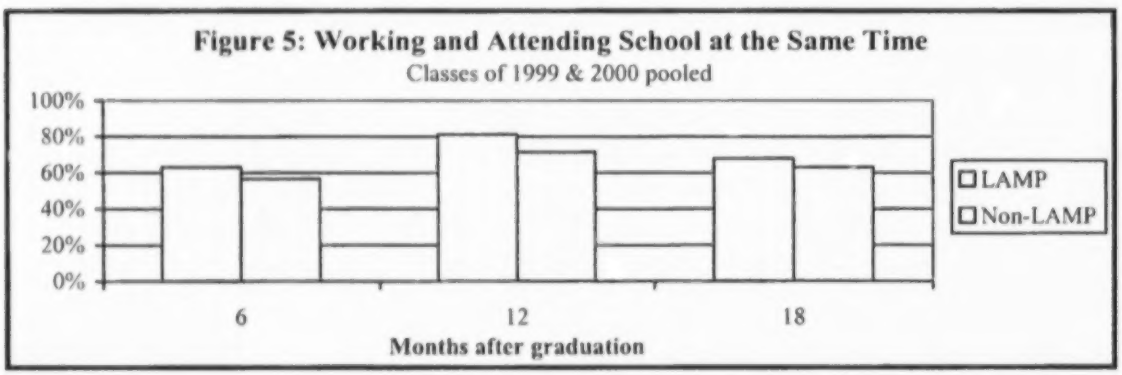


IV WORK-RELATED OUTCOMES

Easing the transition to and persistence within higher education is an important and often overlooked aspect of STC initiatives. For many, however, the main objective of STC is to facilitate the successful transition of young people into stable, well-paying careers that match their interests and abilities. Having noted the LAMP graduates' post-high school academic success, we ask if the program was equally successful in preparing students to enter the workplace.

Working and Attending School at the Same Time

Looking first at those enrolled in post-secondary education, a greater number of these students are also working than in the comparison group. Figure 5 shows that eighteen months after graduation, 68% of LAMP graduates were enrolled *and* working at the same time versus 63.2% of the comparison group. A consistently higher percentage of LAMP graduates have done both over time, particularly during the summer months.

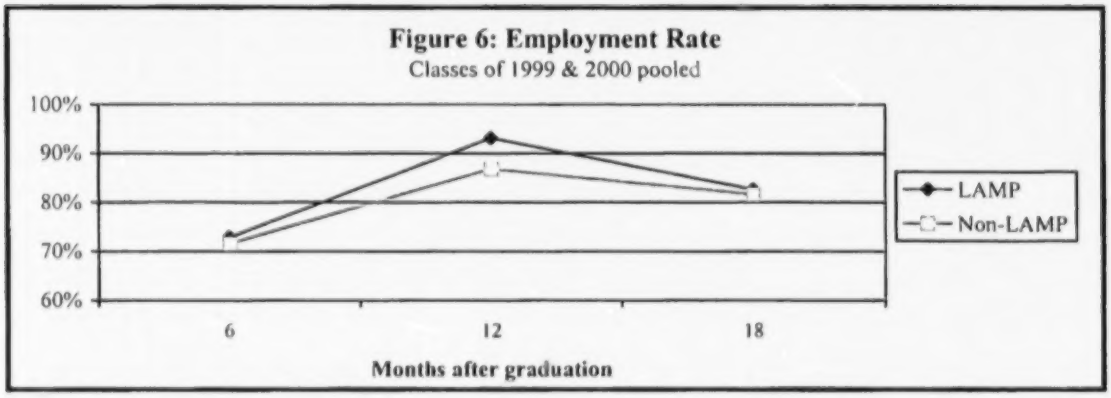


Despite the higher rates of employment, LAMP graduates' cumulative grade point averages were comparable to those of the comparison group, as was shown previously. Working does not detract from the LAMP graduates' ability to perform in school. The LAMP experience, due to its hands-on nature, helped participants appreciate the value of work-based learning, as well as formal education, in career preparation, as reflected in exit surveys. LAMP students who have continued to participate in work-based learning in addition to formal education will be in a strong position to advance towards their career goals upon graduating from college.

Employment

As might be expected, LAMP graduates overall have slightly higher rates of employment than their counterparts. This difference is most pronounced, however, in the summer months when higher proportions of both groups are employed. Given the high rates of college enrollment, this increase in summer employment is most likely due to increased availability of time upon the conclusion of the spring semester. Figure 6 shows enrollment rates over time. At 18 months after graduation, there is little difference between the LAMP and non-LAMP groups. Their

employment rate of 82%, including both full- and part-time work, surpasses the local employment rate for this age group (74%).[2]



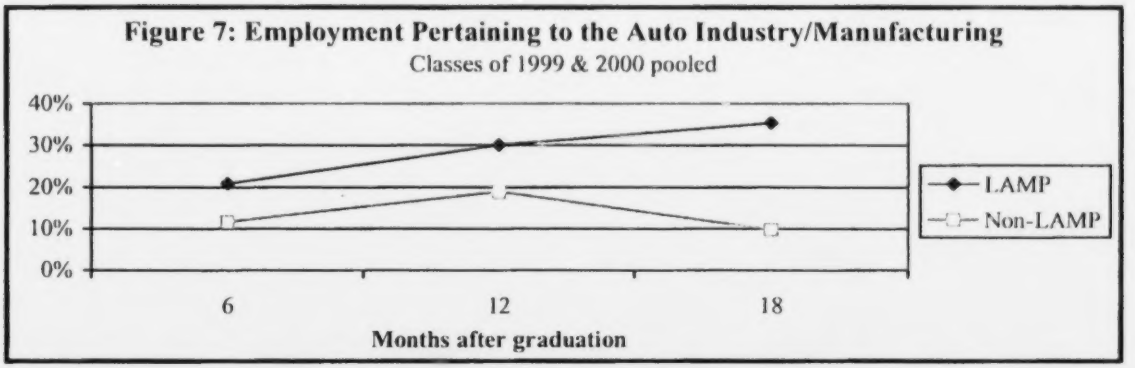
When comparing the average number of hours worked in a week, the data show that LAMP graduates tend to work more than their counterparts. While in the summer (12 months after graduation) both groups work the same average number of hours (about 36), LAMP students work more hours than their comparison group in the winter (31 compared to 29 hours a week at 18 months after graduation). Again, this reflects well on the LAMP graduates' ability to juggle work with education and academic success.

Interesting differences between the LAMP graduates and the comparison group emerge when considering employment histories. At 6, 12, and 18 months after graduation, the LAMP graduates had spent less time in their current jobs and companies than the control group. When a small sample of LAMP graduates were asked why they changed jobs, the answers were mostly pragmatic. They switched jobs as their school calendars changed or for better schedules or higher income. The higher rate of job change among LAMP graduates may be due to their proactive attitude and application of problem-solving skills to their work, meaning that they are more likely to take concrete steps to find new work situations than their counterparts.

Employment within Auto/Manufacturing Industries

As would be expected, LAMP graduates work in the automotive and manufacturing industries at much higher rates than the comparison group. At 18 months after graduation, 35.4% of LAMP graduates, but only 9.7% of the comparison group, were employed in these industries, as shown in Figure 7. While the proportion of non-LAMP graduates working in automotive or manufacturing industries rose to 19% at 12 months after graduation, this correlates with the overall rise in employment in the summer. Since the proportion employed in the industry falls back down to prior levels, these figures do not necessarily suggest a strong interest in the auto industry, but more likely the need for and availability of summer employment.

[2] Public Policy Associates (2000), Lansing Tri-County EAG: High School Graduate Follow-Up Study. Lansing, MI: Authors.



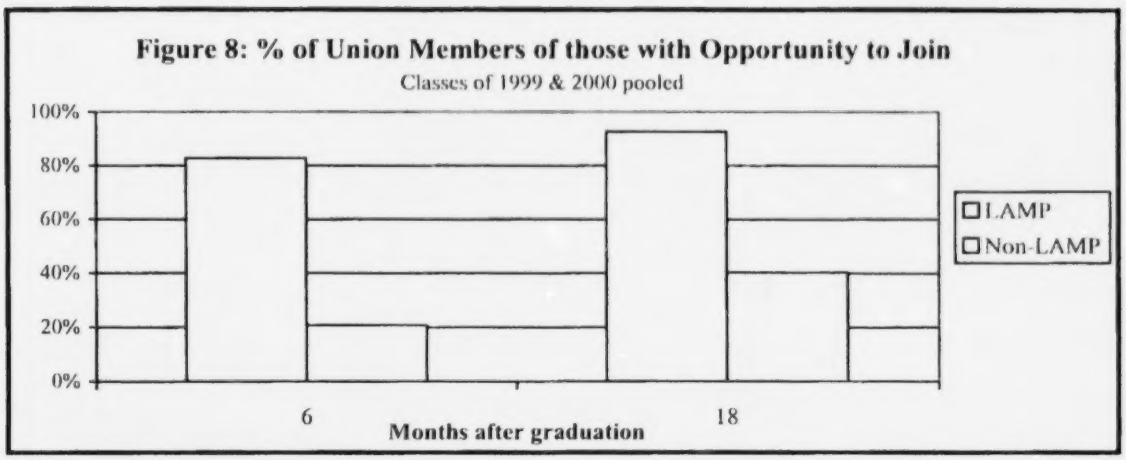
A striking difference between the two groups is that while 25% of LAMP graduates were employed at General Motors (GM), the program sponsor, 18 months after graduation, no non-LAMP graduates were. LAMP students have a clear advantage in opportunities for employment at GM. LAMP students themselves are aware of and have made use of this. Some LAMP graduates currently working at GM noted in their interviews that while their long-term career goals lay beyond auto manufacturing, LAMP enabled them to seek employment at GM while preparing for their next steps.

Union Membership

As described earlier, the United Auto Workers are an important partner in the LAMP initiative. Thus, LAMP students have exposure to a unionized workplace and spend significant time with union members during the program. We would expect this to have a positive effect on their attitudes toward organized labor and on union membership itself.

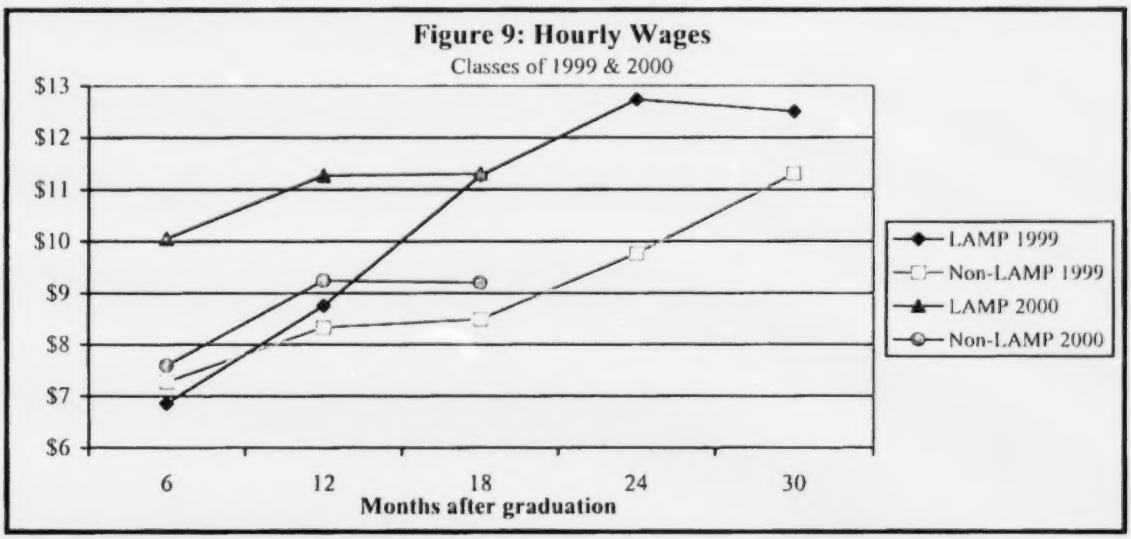
The data show that LAMP graduates are more likely to have the opportunity to join a union at work. More graduates from both groups have gained the opportunity to join a union over time. Thirty-three percent of LAMP graduates had the opportunity at 18 months after graduation while only 14% of the comparison group did. This higher level of opportunity seems to reflect the higher number of LAMP graduates employed at General Motors or in manufacturing industries.

In addition, a substantial difference between LAMP and non-LAMP graduates is apparent in the numbers who join a union. Figure 8 shows that LAMP graduates become union members at much higher rates than non-LAMP graduates, with 93% of those who had access doing so at 18 months in comparison to only 40% of those in the comparison group who had the opportunity.



Wages

We might expect graduates of a school-to-career program to earn higher wages than their counterparts as they enter the workforce due to their enhanced career preparation. And while this is generally the case, the wages over time for each LAMP cohort tell a more complex story as seen in Figure 9.



The LAMP Class of 2000 had a clear wage advantage over their comparison group immediately after graduation and maintained this advantage over the 18 months studied. The LAMP Class of 1999, however, began working at slightly lower wages than their comparison group but surpassed them before a year was out. LAMP wages then grew at a much more rapid rate until they leveled off two years after graduation. The comparison Class of 1999's wages began to climb at 18 months out and, by the end of data collection, were almost as high as those of the LAMP graduates. It appears that LAMP graduates have a wage advantage in the first two and

one-half years after high school. It also appears that if these trend lines continue, there will be convergence between the two groups' wages by about three years after graduation. The wage effects of the LAMP program are significant but short-term. This may be due to the short length of the program. Increasing the length of the program to involve students earlier may increase the program effects and cause them to be more lasting.

Combining the two cohorts 18 months after graduation, the most recent data available for both groups, LAMP graduates made $11.12 per hour on average compared to only $8.86 for the comparison group. This is partially explained by LAMP graduates' employment at General Motors, which pays higher wages than most other entry-level jobs.

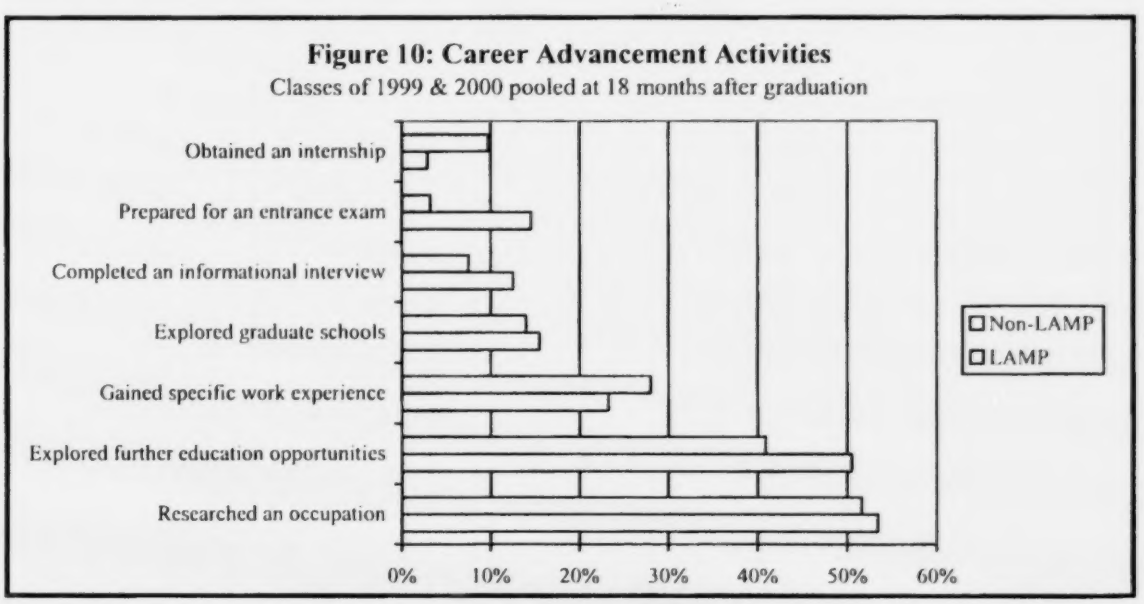
Another measure of financial success is the degree to which individuals contribute to the economic well-being of their families. On this measure, LAMP graduates appear to be more financially responsible, contributing to the home through paying rent or mortgage at a higher rate than their counterparts. Two and one-half years after graduation, 52% of the LAMP Class of 1999 contributed to the home while only 37% of their non-LAMP counterparts did.

Career Advancement Opportunities and Work-Based Training

In addition to preparing students for the challenges and responsibilities of the work environment, designers of the LAMP program sought to enhance the participants' connection to the labor market by giving them the tools to navigate their way through post-high school transitions. One avenue by which students accomplish this is by seeking and capitalizing on career-enhancing opportunities. Figure 10 gives the percentages of those who have participated in a variety of career advancement activities.

Figure 10: Career Advancement Activities

Classes of 1999 & 2000 pooled at 18 months after graduation



LAMP graduates have indeed pursued career advancement opportunities at higher rates than have non-LAMP graduates in five out of the seven activities presented in Figure 10. Most

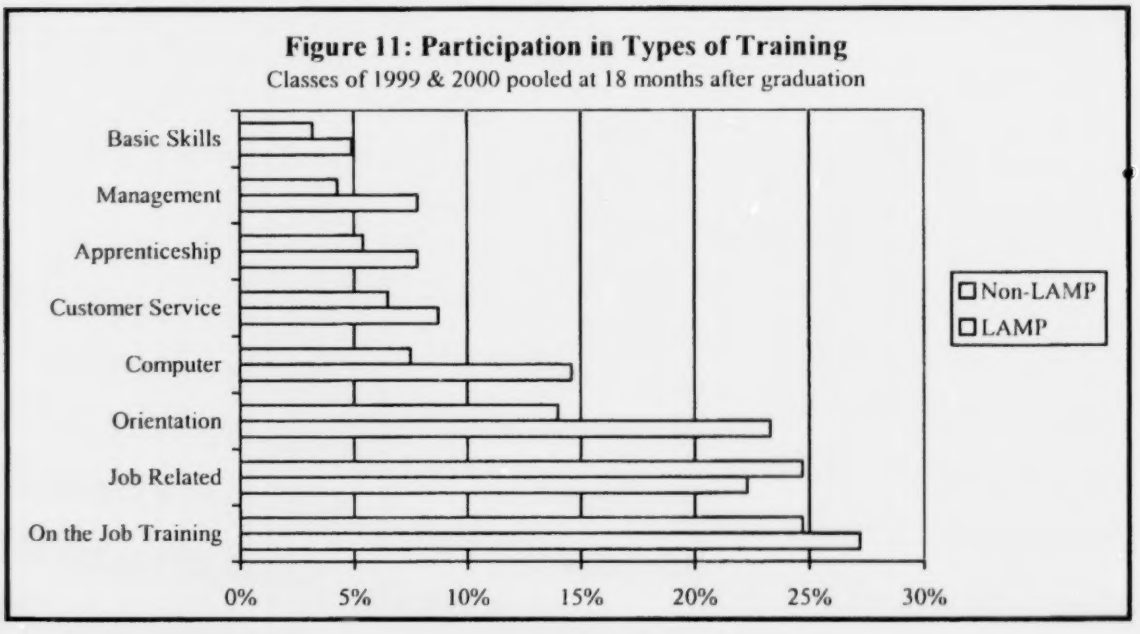
notably, four times as many LAMP graduates had prepared for an entrance exam than had non-LAMP graduates 18 months after graduation. More of the LAMP graduates (12.6%) have "completed an informational interview" than the comparison group, and almost 10% more of the LAMP graduates have "explored further education opportunities" than their counterparts. These findings suggest that STC initiatives gear students towards life-long learning. It also hints at the LAMP graduates' personal confidence and proactive approach to advancement at work.

When we examined engagement in these activities earlier in the graduates' post-high school experience, we found that the percentage differences in specific career advancement activities between the LAMP and non-LAMP groups were generally somewhat greater. This suggests that as they exited high school, LAMP graduates were more likely to immediately take tangible steps towards their career goals. Over time, however, these rates seem to converge with the participation rates of graduates who have not been exposed to the LAMP program. Again, the initial advantage enjoyed by LAMP graduates appears to dissipate over time, perhaps due to the short length of the program.

In addition to advancing their careers, one might expect that life-long learners would take advantage of any training offered in their workplaces. However, LAMP students overall participate in work-offered training opportunities at only slightly higher percentages than non-LAMP students. Forty-one percent of LAMP graduates had participated in some kind of training at work while 39% of non-LAMP graduates had at 12 to 18 months after graduation. When training was broken down into specific areas though, as in Figure 11, LAMP students participated in each type, with the exception of "job-related training," at a higher percentage than the comparison group. In particular, there are notable differences in the proportions accessing computer training or receiving orientation training.

Figure 11: Participation in Types of Training

Classes of 1999 & 2000 pooled at 18 months after graduation



In general, the LAMP graduates do not appear to be taking full advantage of training opportunities available through their employers. Their rates of participation are not remarkably different than their counterparts'. However, given the large proportion of LAMP graduates that are enrolled in school in addition to work, it may be noteworthy that they participate in workplace-offered training to the extent that they do.

V PERSONAL OUTCOMES

The LAMP longitudinal study has tracked the progress of these alumni since their graduation from high school. The most compelling findings reported immediately after graduation were the positive outcomes experienced by the LAMP students in their personal, as well as their work, lives (see *Manufacturing Educational Change, 1999).* That report highlighted the fact that LAMP students were learning in new and exciting ways. Students responded to the new instructional practices of work-based, project-based, and team-based learning with increases in their motivation and attendance, improved interpersonal skills, and clearer focus in their post-secondary plans. One graduate summarized her LAMP experience by saying, "I learned how to be an adult." A majority of the Class of 1999 graduates indicated they were better able to take initiative and responsibility as a result of participation in LAMP. In addition, students increased in self-confidence, respect for others, and their ability to interact with diverse groups of people.

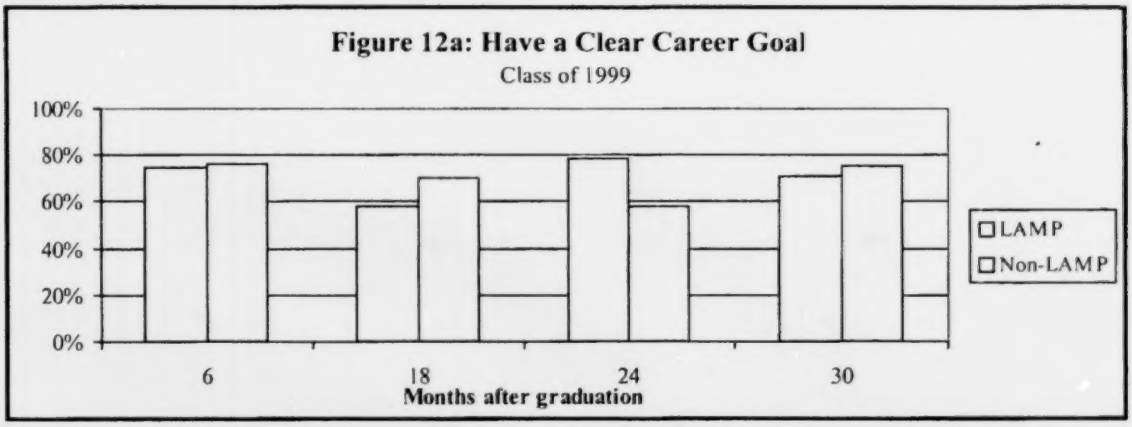
We continue to be interested in the personal development aspects of LAMP, as they are clearly significant in the lives of the graduates and for their employers. Two variables in the study that may shed some light on personal outcomes for participants are career goal development and job satisfaction levels. However, the survey component of the longitudinal study did not allow us to explore personal growth in much depth. Therefore, we highlight selected qualitative data in this discussion, gathered from recent interviews with a small sample of LAMP graduates.

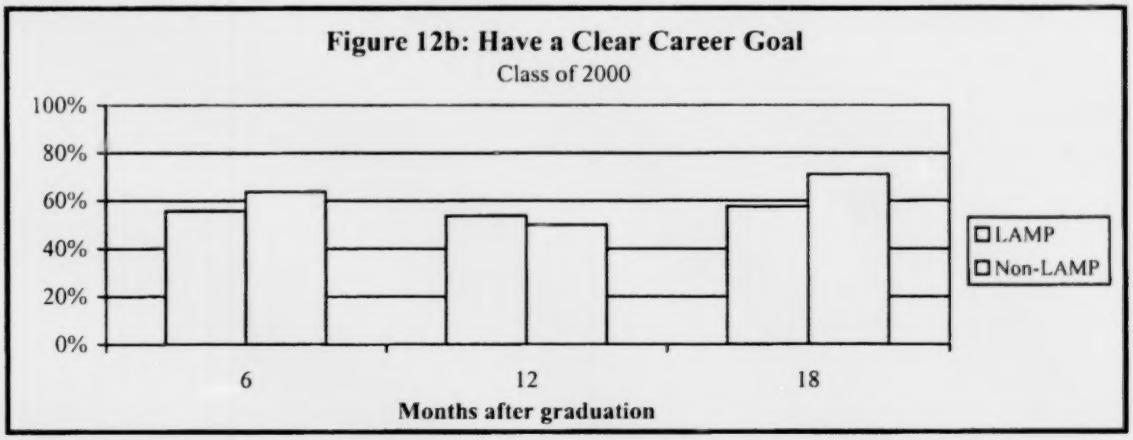
Career Goals/Plans

Like other career development programs, an underlying goal of LAMP is to help students develop clear career plans. Yet the path toward one's career goal is neither linear nor stable. While all students are introduced to the manufacturing industry through LAMP, the program has a unique effect on each individual participant. It has expanded the horizons for students interested in careers in business, as mentioned earlier, and helped students understand which fields they are *not* interested in. For example, one LAMP graduate noted that once his workplace mentor explained the field of mechanical engineering, he realized that it was not the right career. In exit interviews with program participants and stakeholders in 1999, LAMP appeared to have been successful in assisting students to develop career plans by the end of the program year.

It's tempting to assume that graduates' career goals would become even clearer over time, as they pursued further education and entered the job market. However, the percentage of both LAMP and non-LAMP groups reporting a clear career goal fluctuated over time without a clear pattern. As Figures 12a and 12b show, fewer LAMP graduates report having clear career goals than their counterparts the majority of the time. This challenges our expectation of an ever-more-certain career goal for high school graduates.

The years immediately following graduation are a fluid and uncertain time, and students' career choices are continually reshaped by their college courses and job experiences. While a high proportion of students had clear career goals upon high school graduation as reported, that clarity was challenged as new experiences brought them new choices and new options. Given the tumultuous nature of the post-high school experience, it would appear fruitful to revisit our expectation that the goals that youth develop in high school will or even should remain





unchanged as they begin their adult lives. Thus the lack of clear goals should not be seen as reflecting poorly on the graduates or as evidence of program failure. Indeed, LAMP graduates, including those who had experienced career goal changes, referenced relatively high levels of preparedness for pursuing their goals along with an acceptance that these goals are likely to change.

In contrast to our quantitative findings, recent qualitative interviews with a small sample of LAMP graduates found them to be highly motivated, focused, and goal-oriented overall. Clearly, the program is not without impact on the career decisions of its graduates. Interviewees recounted that LAMP had influenced their career decisions and a substantial fraction said the program had been instrumental in helping them to develop and plan for their career goals. Generally speaking, graduates said that the program had done a good job of educating them about career opportunities. Thus, as their actual career goals evolved, LAMP provided a useful framework in which to develop and reassess these goals.

One clear difference between the LAMP graduates and the comparison group is that LAMP graduates reported that their goals involved the automotive or manufacturing industries at much

higher rates. Thirty-one percent of LAMP graduates stated a goal relating to the automotive industry 18 months after high school graduation while only 10% of the comparison group did.

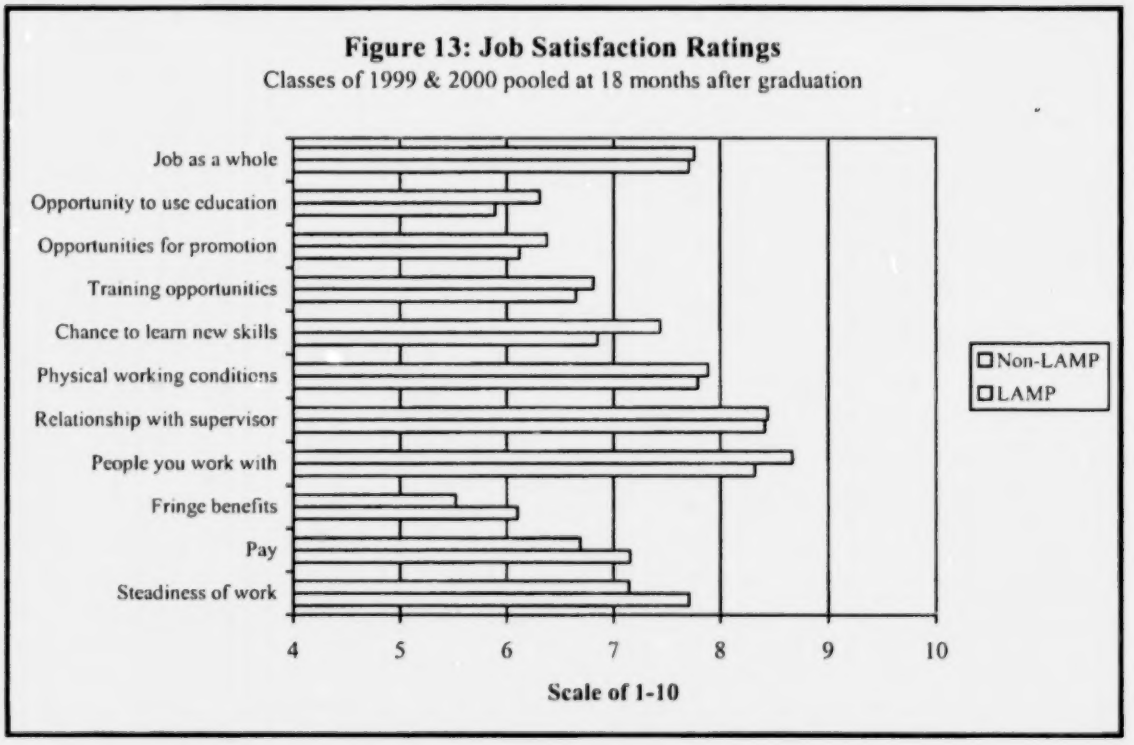
Job Satisfaction

It is difficult to interpret the outcome of job satisfaction ratings for LAMP graduates. We might assume that their superior preparation for and in-depth introduction to the world of work would allow them to land higher-level positions and thus make them more satisfied in their jobs than their counterparts. Their familiarity with the world of work may also lead to increased satisfaction as they are not surprised by what they encounter.

As it turns out, LAMP and non-LAMP graduates are equally satisfied with their jobs overall 18 months after graduation, both giving them a fairly high rating of about 7.7 on a scale of 1 to 10, as Figure 13 shows. The reality of the youth labor market is such that the differences between the jobs that either group can land early on are very small. Despite their LAMP experience, the LAMP graduates have difficulty landing more demanding and rewarding jobs armed with only a high school diploma.

Figure 13: Job Satisfaction Ratings

Classes of 1999 & 2000 pooled at 18 months after graduation



Looking more closely, we see that the LAMP students are slightly less satisfied with their jobs as a whole than non-LAMP students and this trend appears to have remained consistent over time. This may be due to the expectations developed in LAMP as students were introduced to a highly-effective work environment and taught higher-order employment skills. In entry-level positions, often in environments that do not qualify as high performance organizations, they may feel

frustrated at not being able to apply these skills and are likely to recognize areas in which their employers could improve the work processes and environment.

When asked to rank 10 specific aspects of their jobs, LAMP graduates expressed lower levels of satisfaction for 7 of these. The greatest difference came in their satisfaction with the "chance to learn new skills." On the other hand, the LAMP graduates did rate three characteristics higher than the comparison group: "pay," "fringe benefits," and "steadiness of work." There is a comparatively large difference between the two groups in their rankings of these factors. The LAMP graduates' higher satisfaction in these areas correlates with their higher average rates of pay, their higher levels of union membership, and their higher average number of hours worked in a week.

Job satisfaction in the early years of work does not seem to be positively affected by participation in LAMP. Not only do both LAMP and non-LAMP graduates have a similar level of satisfaction with their jobs, but both groups also rank their satisfaction with specific job factors in a similar order, relationships with coworkers and supervisors most highly and fringe benefits and the opportunity to use their education at the bottom. When a small sample of LAMP graduates were asked what determines job satisfaction for them, the majority of these reported that they "wanted to love what they do," which includes being "challenged in the workplace." At this point, rate of pay does not seem to be a strong factor in long-term job satisfaction.

Work Ethic and Performance

Employers will be interested in learning if participation in LAMP instills a stronger work ethic and commitment to high performance in its graduates. They may also wonder if graduates perform at a high level once employed. While the longitudinal survey does not provide the data to answer these questions definitively, interviews with LAMP graduates offered information about changes in attitudes, motivation, and performance that they attributed to the program. The vast majority of those interviewed reported that there was a noticeable difference at work between their performance and that of their colleagues. A 1999 LAMP graduate expressed well what was frequently heard from others:

> *I react better to problems, give more input to my boss. I have a better understanding of the workplace, I have better communication skills, I relate to my supervisor and others better.*

In particular, a handful of those who work at GM also felt that LAMP positively affected their performance there, making them better team players.

While it would be interesting to have the graduates' self-analyses corroborated through interviews with their supervisors, it is noteworthy that the graduates themselves recognize the connection between their engagement in their workplaces, the workplace skills that they employ, their interpersonal skills, and what they learned in the LAMP program. The program appears to have been successful not only in developing such skills in its graduates but also in enabling them to undertake incisive self-evaluation.

Decision-Making and Self-Confidence

LAMP students are taught problem-solving and goal-setting techniques and virtually all graduates interviewed specifically reported that they use these when making decisions, both work-related and personal. They are more likely to systematically mull things over rather than decide rashly. Most of those interviewed also indicated their greater confidence to "try something new" and "explore different opportunities," again attributing this to their experience in the LAMP program. Some of the previously more introverted respondents stated that their new-found confidence allowed them to become more of a "people person."

Generally, graduates report that they have grown personally as a result of their involvement in LAMP. All those interviewed expressed how fortunate they are to have participated in such a program, despite the fact that at enrollment not all were sure what they would gain from it. This finding, not obvious from the survey data, is important. Program graduates—those who care most deeply about their own success—view the program as advantageous. They feel that they have been offered a head start as they transition into adulthood and employment. Indeed, objective education and employment indicators reflect a relative advantage for LAMP graduates at the early stages of career building. But perhaps even more importantly, these same youth who have become more thoughtful, motivated, confident, and responsible seem poised to attain career success and personal happiness over the longer term.

VI CONCLUSIONS

The long-term effects of LAMP, documented over the first several years following high school graduation, are extremely promising. LAMP graduates are pursuing post-secondary education at higher rates than comparison groups in a wide variety of fields. As a group, the LAMP graduates are maintaining good grades and a significant majority of them are working *and* attending school at the same time. In the workplace, they work more hours, receive higher wages, and participate in career advancement activities at higher rates than their counterparts. LAMP graduates appear to have been better prepared for the transition from high school to college and employment.

Those familiar with the LAMP experience might have predicted these results. However, some study findings were more surprising. LAMP graduates are not employed nor do they participate in training activities at work at significantly higher rates than their counterparts. They are not measurably more satisfied with their jobs than non-LAMP graduates and they change jobs more frequently.

As a whole, the data suggest that the LAMP graduates are still preparing for their careers. It seems the graduates have consciously decided to invest in their education, rather than in employment or workplace-offered training. Virtually all of them have attended school or a training program, with the vast majority still enrolled. Their high levels of persistence in college suggest a high level of commitment to their education. While most graduates have also sought employment, schooling is the primary vehicle for achieving their career goals.

Program administrators can take pride in results like the rate of participation in post-secondary education or the ease of the transition from high school into post-secondary education and employment, but the ultimate impact of the LAMP program may be judged in terms of how the program has helped graduates transition into the careers of their choice. This transition will become more visible as graduates complete their post-secondary education. However, the college experience itself will inevitably shape the graduates' career choices and trajectories, as well as developing them as individuals. It will become more difficult to attribute their future successes or struggles to the short though significant experience of their senior year of high school. While a longitudinal study is extremely valuable in allowing us to chart the early years of high school graduates, the more years that have passed since graduation, the less we are able to confidently attribute individual outcomes to one year of high school programming.

As the comparison group's hourly wages approach those of LAMP graduates three years after graduation and as LAMP graduates' participation in training at work declines to comparable levels with the control group after 18 months, it becomes increasingly clear that some of the effects of LAMP are short term. Not only should development during the college years subsume that of high school, but the effects of a half-day program, offered after 11 years of traditional education, can only be expected to give participants a head start in the short term. We suggest that expansion of the innovative educational strategies employed by LAMP that link the classroom with the workplace throughout the high school experience would extend the significant benefits of LAMP over a longer period of time.

The clear benefits of participation in the LAMP program over the three years following high school graduation indicate that it is a model to be emulated, not just for those involved in STC programs, but also for those interested in educational change in high schools leading to successful college transition. We recommend that other communities invest in their futures by drawing on the strengths demonstrated by the LAMP model.

SUMMARY OF LAMP LONGITUDINAL FINDINGS:
12 TO 18 MONTHS AFTER HIGH SCHOOL GRADUATION

- ✓ LAMP graduates pursue post-secondary education at rates higher than the comparison group.
- ✓ In addition, LAMP graduates have a higher level of persistence in higher education than their counterparts.
- ✓ LAMP graduates pursue a wide variety of fields of study, not limited to manufacturing or other technical careers.
- ✓ More LAMP graduates were enrolled *and* working at the same time versus the comparison group.
- ✓ Despite the higher rates of employment, LAMP graduates' cumulative grade point averages were comparable to those of the comparison group.
- ✓ Eighteen months after graduation, 82% of LAMP and comparison graduates were employed—surpassing the local employment rate for this age group (74%).
- ✓ The average hourly wage for LAMP graduates rose $1.04 to $11.12 per hour, while the comparison group's rose $.10 to $8.86 between 12 and 18 months after high school graduation.
- ✓ Twice as many LAMP graduates were working in the automotive/manufacturing industries as their counterparts.
- ✓ Union membership for LAMP graduates with the opportunity is more than twice that of the comparison group.
- ✓ Overall, LAMP graduates have consistently taken more tangible steps to advance their careers than their counterparts.
- ✓ LAMP graduates reported that their goals involved the automotive or manufacturing industries at much higher rates than their counterparts.
- ✓ LAMP graduates report better job performances compared to those of their co-workers.
- ✓ In addition to highly developed decision-making skills, LAMP graduates report improved confidence, responsibility, and teamwork.

NIWL'S EVALUATIVE REPORTS ON LAMP

The following reports were developed by AED's National Institute for Work and Learning as part of the ongoing LAMP evaluation. Originally prepared for the United Auto Workers-General Motors Center for Human Resources, the majority are now available on-line at: www.aed.org/ctrniwl/index.html, in 'New Publications and Studies,' under 'School-to-Work.'

Simultaneous Development: Interim Evaluation of the LAMP Pilot Program.
A. Bell, S. Hubbard Taylor, and K. MacAllum. AED, Washington, DC, 1998.

Manufacturing Educational Change: Impact Evaluation of LAMP.
K. MacAllum, S. Hubbard Taylor, and A. Bell Johnson. AED, Washington, DC, 1999.

Manufacturing Educational Change: Executive Summary.
K. MacAllum, S. Hubbard Taylor, and A. Bell Johnson. AED, Washington, DC, 1999.

Beyond the Success of the Students: An Analysis of Benefits that Accrue to STC Partners.
K. MacAllum and I. Charner. AED, Washington, DC, 2000.

Words to the Wise: Advice to Students, Teachers, and Administrators from Recent High School Graduates.
A special report prepared for the Lansing Area Tri-County School System.
K. MacAllum, J. Fritts, and A. Tomlanovich. AED, Washington, DC, 2001.

Transitioning to College and Career: Interim Findings from the LAMP Longitudinal Study.
K. MacAllum, D. Worgs, R. Bozick, and D. McDonald. AED, Washington, DC, 2001.

What Happens After They Graduate? Results from a Longitudinal Study of STC Graduates.
K. MacAllum and R. Bozick. AED, Washington, DC, 2001.

The Lansing Area Manufacturing Partnership: A School-to-Success Story.
A. Bell Johnson, D. McDonald, and K. MacAllum. AED, Washington, DC, 2002.

LAMP WISE / LAMP WHYS: A Practical Guide to LAMP.
K. MacAllum, D. McDonald, and A. Bell Johnson. AED, Washington, DC, 2002.

Does Participation in School-to-Career Limit Students' Educational and Career Options? Findings from the LAMP Longitudinal Study.
R. Bozick and K. MacAllum. AED, Washington, DC, 2002.

Moving Forward: College and Career Transitions of LAMP Graduates. Findings from the LAMP Longitudinal Study.
K. MacAllum, K. Yoder, S. Kim, and R. Bozick. AED, Washington, DC, 2002.

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